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#4

Patent Docket P1042C1

## Sequence Listing

<110> Lazarus, Robert A.  
Pan, Clark Qun

<120> HUMAN DNASE I HYPERACTIVE VARIANTS

<130> P1042C1

<140> US 10/005,306

<141> 2001-11-07

<150> US 08/663,831

<151> 1996-06-14

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Arg Tyr Asp Ile Ala Leu Val Gln Glu Val Arg Asp Ser His Leu  
35 40 45

Thr Ala Val Gly Lys Leu Leu Asp Asn Leu Asn Gln Asp Ala Pro  
50 55 60

Asp Thr Tyr His Tyr Val Val Ser Glu Pro Leu Gly Arg Asn Ser  
65 70 75

Tyr Lys Glu Arg Tyr Leu Phe Val Tyr Arg Pro Asp Gln Val Ser  
80 85 90

Ala Val Asp Ser Tyr Tyr Tyr Asp Asp Gly Cys Glu Pro Cys Gly  
95 100 105

Asn Asp Thr Phe Asn Arg Glu Pro Ala Ile Val Arg Phe Phe Ser  
110 115 120

Arg Phe Thr Glu Val Arg Glu Phe Ala Ile Val Pro Leu His Ala  
125 130 135

Ala Pro Gly Asp Ala Val Ala Glu Ile Asp Ala Leu Tyr Asp Val  
140 145 150

Tyr	Leu	Asp	Val	Gln	Glu	Lys	Trp	Gly	Leu	Glu	Asp	Val	Met	Leu
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Met	Gly	Asp	Phe	Asn	Ala	Gly	Cys	Ser	Tyr	Val	Arg	Pro	Ser	Gln
				170					175					180
Trp	Ser	Ser	Ile	Arg	Leu	Trp	Thr	Ser	Pro	Thr	Phe	Gln	Trp	Leu
				185					190					195
Ile	Pro	Asp	Ser	Ala	Asp	Thr	Thr	Ala	Thr	Pro	Thr	His	Cys	Ala
				200					205					210
Tyr	Asp	Arg	Ile	Val	Val	Ala	Gly	Met	Leu	Leu	Arg	Gly	Ala	Val
				215					220					225
Val	Pro	Asp	Ser	Ala	Leu	Pro	Phe	Asn	Phe	Gln	Ala	Ala	Tyr	Gly
				230					235					240
Leu	Ser	Asp	Gln	Leu	Ala	Gln	Ala	Ile	Ser	Asp	His	Tyr	Pro	Val
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Glu	Val	Met	Leu	Lys										
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Arg	Tyr	Asp	Ile	Ala	Leu	Val	Gln	Glu	Val	Arg	Asp	Ser	His	Leu
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Thr	Ala	Val	Gly	Lys	Leu	Leu	Asp	Asn	Leu	Asn	Gln	Asp	Ala	Pro
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Asp	Thr	Tyr	His	Tyr	Val	Val	Ser	Glu	Pro	Leu	Gly	Arg	Asn	Ser
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Tyr	Lys	Glu	Arg	Tyr	Leu	Phe	Val	Tyr	Arg	Pro	Asp	Gln	Val	Ser
				80					85					90
Ala	Val	Asp	Ser	Tyr	Tyr	Tyr	Asp	Asp	Gly	Cys	Glu	Pro	Cys	Gly
				95					100					105
Asn	Asp	Thr	Phe	Asn	Arg	Glu	Pro	Ala	Ile	Val	Arg	Phe	Phe	Ser
				110					115					120

Arg Phe Thr Glu Val Arg Glu Phe Ala Ile Val Pro Leu His Ala		
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Ala Pro Gly Asp Ala Val Ala Glu Ile Asp Ala Leu Tyr Asp Val		
	140	145 150
Tyr Leu Asp Val Gln Glu Lys Trp Gly Leu Glu Asp Val Met Leu		
	155	160 165
Met Gly Asp Phe Asn Ala Gly Cys Ser Tyr Val Arg Pro Ser Gln		
	170	175 180
Trp Ser Ser Ile Arg Leu Trp Thr Ser Pro Thr Phe Gln Trp Leu		
	185	190 195
Ile Pro Asp Ser Ala Asp Thr Thr Ala Thr Pro Thr His Cys Ala		
	200	205 210
Tyr Asp Arg Ile Val Val Ala Gly Met Leu Leu Arg Gly Ala Val		
	215	220 225
Val Pro Asp Ser Ala Leu Pro Phe Asn Phe Gln Ala Ala Tyr Gly		
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Leu Ser Asp Gln Leu Ala Gln Ala Ile Ser Asp His Tyr Pro Val		
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Glu Val Met Leu Lys		
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Arg Tyr Asp Ile Ala Leu Val Gln Glu Val Arg Asp Ser His Leu		
	35	40 45
Thr Ala Val Gly Lys Leu Leu Asp Asn Leu Asn Gln Asp Ala Pro		
	50	55 60
Asp Thr Tyr His Tyr Val Val Ser Glu Pro Leu Gly Arg Asn Ser		
	65	70 75
Tyr Lys Glu Arg Tyr Leu Phe Val Tyr Arg Pro Asp Gln Val Ser		
	80	85 90

Ala	Val	Asp	Ser	Tyr	Tyr	Tyr	Asp	Asp	Gly	Cys	Glu	Pro	Cys	Gly	95	100	105
Asn	Asp	Thr	Phe	Asn	Arg	Glu	Pro	Ala	Ile	Val	Arg	Phe	Phe	Ser	110	115	120
Arg	Phe	Thr	Glu	Val	Arg	Glu	Phe	Ala	Ile	Val	Pro	Leu	His	Ala	125	130	135
Ala	Pro	Gly	Asp	Ala	Val	Ala	Glu	Ile	Asp	Ala	Leu	Tyr	Asp	Val	140	145	150
Tyr	Leu	Asp	Val	Gln	Glu	Lys	Trp	Gly	Leu	Glu	Asp	Val	Met	Leu	155	160	165
Met	Gly	Asp	Phe	Asn	Ala	Gly	Cys	Ser	Tyr	Val	Arg	Pro	Ser	Gln	170	175	180
Trp	Ser	Ser	Ile	Arg	Leu	Trp	Thr	Ser	Pro	Thr	Phe	Gln	Trp	Leu	185	190	195
Ile	Pro	Asp	Ser	Ala	Asp	Thr	Thr	Ala	Thr	Pro	Thr	His	Cys	Ala	200	205	210
Tyr	Asp	Arg	Ile	Val	Val	Ala	Gly	Met	Leu	Leu	Arg	Gly	Ala	Val	215	220	225
Val	Pro	Asp	Ser	Ala	Leu	Pro	Phe	Asn	Phe	Gln	Ala	Ala	Tyr	Gly	230	235	240
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Glu	Val	Met	Leu	Lys											260		

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Arg	Tyr	Asp	Ile	Ala	Leu	Val	Gln	Glu	Val	Arg	Asp	Ser	His	Leu	35	40	45	
Thr	Ala	Val	Gly	Lys	Leu	Leu	Asp	Asn	Leu	Asn	Gln	Asp	Ala	Pro	50	55	60	

Asp	Thr	Tyr	His	Tyr	Val	Val	Ser	Glu	Pro	Leu	Gly	Arg	Asn	Ser	
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Tyr	Lys	Glu	Arg	Tyr	Leu	Phe	Val	Tyr	Arg	Pro	Asp	Gln	Val	Ser	
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Ala	Val	Asp	Ser	Tyr	Tyr	Tyr	Asp	Asp	Gly	Cys	Glu	Pro	Cys	Gly	
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Asn	Asp	Thr	Phe	Asn	Arg	Glu	Pro	Ala	Ile	Val	Arg	Phe	Phe	Ser	
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Arg	Phe	Thr	Glu	Val	Arg	Glu	Phe	Ala	Ile	Val	Pro	Leu	His	Ala	
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Ala	Pro	Gly	Asp	Ala	Val	Ala	Glu	Ile	Asp	Ala	Leu	Tyr	Asp	Val	
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Tyr	Leu	Asp	Val	Gln	Glu	Lys	Trp	Gly	Leu	Glu	Asp	Val	Met	Leu	
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Met	Gly	Asp	Phe	Asn	Ala	Gly	Cys	Ser	Tyr	Val	Arg	Pro	Ser	Gln	
				170					175					180	
Trp	Ser	Ser	Ile	Arg	Leu	Trp	Thr	Ser	Pro	Thr	Phe	Gln	Trp	Leu	
				185					190					195	
Ile	Pro	Asp	Ser	Ala	Asp	Thr	Thr	Ala	Thr	Pro	Thr	His	Cys	Ala	
				200					205					210	
Tyr	Asp	Arg	Ile	Val	Val	Ala	Gly	Met	Leu	Leu	Arg	Gly	Ala	Val	
				215					220					225	
Val	Pro	Asp	Ser	Ala	Leu	Pro	Phe	Asn	Phe	Gln	Ala	Ala	Tyr	Gly	
				230					235					240	
Leu	Ser	Asp	Gln	Leu	Ala	Gln	Ala	Ile	Ser	Asp	His	Tyr	Pro	Val	
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Arg	Tyr	Asp	Ile	Ala	Leu	Val	Gln	Glu	Val	Arg	Asp	Ser	His	Leu	35	40	45
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Asp	Thr	Tyr	His	Tyr	Val	Val	Ser	Glu	Pro	Leu	Gly	Arg	Asn	Ser	65	70	75
Tyr	Lys	Glu	Arg	Tyr	Leu	Phe	Val	Tyr	Arg	Pro	Asp	Gln	Val	Ser	80	85	90
Ala	Val	Asp	Ser	Tyr	Tyr	Tyr	Asp	Asp	Gly	Cys	Glu	Pro	Cys	Gly	95	100	105
Asn	Asp	Thr	Phe	Asn	Arg	Glu	Pro	Ala	Ile	Val	Arg	Phe	Phe	Ser	110	115	120
Arg	Phe	Thr	Glu	Val	Arg	Glu	Phe	Ala	Ile	Val	Pro	Leu	His	Ala	125	130	135
Ala	Pro	Gly	Asp	Ala	Val	Ala	Glu	Ile	Asp	Ala	Leu	Tyr	Asp	Val	140	145	150
Tyr	Leu	Asp	Val	Gln	Glu	Lys	Trp	Gly	Leu	Glu	Asp	Val	Met	Leu	155	160	165
Met	Gly	Asp	Phe	Asn	Ala	Gly	Cys	Ser	Tyr	Val	Arg	Pro	Ser	Gln	170	175	180
Trp	Ser	Ser	Ile	Arg	Leu	Trp	Thr	Ser	Pro	Thr	Phe	Gln	Trp	Leu	185	190	195
Ile	Pro	Asp	Ser	Ala	Asp	Thr	Thr	Ala	Thr	Pro	Thr	His	Cys	Ala	200	205	210
Tyr	Asp	Arg	Ile	Val	Val	Ala	Gly	Met	Leu	Leu	Arg	Gly	Ala	Val	215	220	225
Val	Pro	Asp	Ser	Ala	Leu	Pro	Phe	Asn	Phe	Gln	Ala	Ala	Tyr	Gly	230	235	240
Leu	Ser	Asp	Gln	Leu	Ala	Gln	Ala	Ile	Ser	Asp	His	Tyr	Pro	Val	245	250	255
Glu	Val	Met	Leu	Lys											260		

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Arg	Tyr	Asp	Ile	Ala	Leu	Val	Gln	Glu	Val	Arg	Asp	Ser	His	Leu	35	40	45	
Thr	Ala	Val	Gly	Lys	Leu	Leu	Asp	Asn	Leu	Asn	Gln	Asp	Ala	Pro	50	55	60	
Asp	Thr	Tyr	His	Tyr	Val	Val	Ser	Glu	Pro	Leu	Gly	Arg	Asn	Ser	65	70	75	
Tyr	Lys	Glu	Arg	Tyr	Leu	Phe	Val	Tyr	Arg	Pro	Asp	Gln	Val	Ser	80	85	90	
Ala	Val	Asp	Ser	Tyr	Tyr	Tyr	Asp	Asp	Gly	Cys	Glu	Pro	Cys	Gly	95	100	105	
Asn	Asp	Thr	Phe	Asn	Arg	Glu	Pro	Ala	Ile	Val	Arg	Phe	Phe	Ser	110	115	120	
Arg	Phe	Thr	Glu	Val	Arg	Glu	Phe	Ala	Ile	Val	Pro	Leu	His	Ala	125	130	135	
Ala	Pro	Gly	Asp	Ala	Val	Ala	Glu	Ile	Asp	Ala	Leu	Tyr	Asp	Val	140	145	150	
Tyr	Leu	Asp	Val	Gln	Glu	Lys	Trp	Gly	Leu	Glu	Asp	Val	Met	Leu	155	160	165	
Met	Gly	Asp	Phe	Asn	Ala	Gly	Cys	Ser	Tyr	Val	Arg	Pro	Ser	Gln	170	175	180	
Trp	Ser	Ser	Ile	Arg	Leu	Trp	Thr	Ser	Pro	Thr	Phe	Gln	Trp	Leu	185	190	195	
Ile	Pro	Asp	Ser	Ala	Asp	Thr	Thr	Ala	Thr	Pro	Thr	His	Cys	Ala	200	205	210	
Tyr	Asp	Arg	Ile	Val	Val	Ala	Gly	Met	Leu	Leu	Arg	Gly	Ala	Val	215	220	225	
Val	Pro	Asp	Ser	Ala	Leu	Pro	Phe	Asn	Phe	Gln	Ala	Ala	Tyr	Gly	230	235	240	
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Glu	Val	Met	Leu	Lys	260													



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 Arg Tyr Asp Ile Ala Leu Val Gln Glu Val Arg Asp Ser Lys Leu  
                     35                    40                    45  
 Thr Ala Val Gly Lys Leu Leu Asp Asn Leu Asn Gln Asp Ala Pro  
                     50                    55                    60  
 Asp Thr Tyr His Tyr Val Val Ser Glu Pro Leu Gly Arg Asn Ser  
                     65                    70                    75  
 Tyr Lys Glu Arg Tyr Leu Phe Val Tyr Arg Pro Asp Gln Val Ser  
                     80                    85                    90  
 Ala Val Asp Ser Tyr Tyr Tyr Asp Asp Gly Cys Glu Pro Cys Gly  
                     95                    100                    105  
 Asn Asp Thr Phe Asn Arg Glu Pro Ala Ile Val Arg Phe Phe Ser  
                     110                    115                    120  
 Arg Phe Thr Glu Val Arg Glu Phe Ala Ile Val Pro Leu His Ala  
                     125                    130                    135  
 Ala Pro Gly Asp Ala Val Ala Glu Ile Asp Ala Leu Tyr Asp Val  
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 Met Gly Asp Phe Asn Ala Gly Cys Ser Tyr Val Arg Pro Ser Gln  
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 Trp Ser Ser Ile Arg Leu Trp Thr Ser Pro Thr Phe Gln Trp Leu  
                     185                    190                    195  
 Ile Pro Asp Ser Ala Asp Thr Thr Ala Thr Pro Thr His Cys Ala  
                     200                    205                    210  
 Tyr Asp Arg Ile Val Val Ala Gly Met Leu Leu Arg Gly Ala Val  
                     215                    220                    225  
 Val Pro Asp Ser Ala Leu Pro Phe Asn Phe Gln Ala Ala Tyr Gly  
                     230                    235                    240

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Glu Val Met Leu Lys  
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20 25 30

Arg Tyr Asp Ile Ala Leu Val Gln Glu Val Arg Asp Ser Arg Leu  
35 40 45

Thr Ala Val Gly Lys Leu Leu Asp Asn Leu Asn Gln Asp Ala Pro  
50 55 60

Asp Thr Tyr His Tyr Val Val Ser Glu Pro Leu Gly Arg Asn Ser  
65 70 75

Tyr Lys Glu Arg Tyr Leu Phe Val Tyr Arg Pro Asp Gln Val Ser  
80 85 90

Ala Val Asp Ser Tyr Tyr Tyr Asp Asp Gly Cys Glu Pro Cys Gly  
95 100 105

Asn Asp Thr Phe Asn Arg Glu Pro Ala Ile Val Arg Phe Phe Ser  
110 115 120

Arg Phe Thr Glu Val Arg Glu Phe Ala Ile Val Pro Leu His Ala  
125 130 135

Ala Pro Gly Asp Ala Val Ala Glu Ile Asp Ala Leu Tyr Asp Val  
140 145 150

Tyr Leu Asp Val Gln Glu Lys Trp Gly Leu Glu Asp Val Met Leu  
155 160 165

Met Gly Asp Phe Asn Ala Gly Cys Ser Tyr Val Arg Pro Ser Gln  
170 175 180

Trp Ser Ser Ile Arg Leu Trp Thr Ser Pro Thr Phe Gln Trp Leu  
185 190 195

Ile Pro Asp Ser Ala Asp Thr Thr Ala Thr Pro Thr His Cys Ala  
200 205 210

Tyr	Asp	Arg	Ile	Val	Val	Ala	Gly	Met	Leu	Leu	Arg	Gly	Ala	Val
				215					220					225
Val	Pro	Asp	Ser	Ala	Leu	Pro	Phe	Asn	Phe	Gln	Ala	Ala	Tyr	Gly
				230					235					240
Leu	Ser	Asp	Gln	Leu	Ala	Gln	Ala	Ile	Ser	Asp	His	Tyr	Pro	Val
				245					250					255
Glu	Val	Met	Leu	Lys										
				260										

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				20					25					30
Arg	Tyr	Asp	Ile	Ala	Leu	Val	Gln	Glu	Val	Arg	Asp	Ser	His	Leu
				35					40					45
Thr	Ala	Val	Gly	Lys	Leu	Leu	Asp	Asn	Leu	Asn	Gln	Asp	Ala	Pro
				50					55					60
Asp	Thr	Tyr	His	Tyr	Val	Val	Ser	Glu	Pro	Leu	Gly	Arg	Lys	Ser
				65					70					75
Tyr	Lys	Glu	Arg	Tyr	Leu	Phe	Val	Tyr	Arg	Pro	Asp	Gln	Val	Ser
				80					85					90
Ala	Val	Asp	Ser	Tyr	Tyr	Tyr	Asp	Asp	Gly	Cys	Glu	Pro	Cys	Gly
				95					100					105
Asn	Asp	Thr	Phe	Asn	Arg	Glu	Pro	Ala	Ile	Val	Arg	Phe	Phe	Ser
				110					115					120
Arg	Phe	Thr	Glu	Val	Arg	Glu	Phe	Ala	Ile	Val	Pro	Leu	His	Ala
				125					130					135
Ala	Pro	Gly	Asp	Ala	Val	Ala	Glu	Ile	Asp	Ala	Leu	Tyr	Asp	Val
				140					145					150
Tyr	Leu	Asp	Val	Gln	Glu	Lys	Trp	Gly	Leu	Glu	Asp	Val	Met	Leu
				155					160					165
Met	Gly	Asp	Phe	Asn	Ala	Gly	Cys	Ser	Tyr	Val	Arg	Pro	Ser	Gln
				170					175					180

Trp	Ser	Ser	Ile	Arg	Leu	Trp	Thr	Ser	Pro	Thr	Phe	Gln	Trp	Leu
				185					190					195
Ile	Pro	Asp	Ser	Ala	Asp	Thr	Thr	Ala	Thr	Pro	Thr	His	Cys	Ala
				200					205					210
Tyr	Asp	Arg	Ile	Val	Val	Ala	Gly	Met	Leu	Leu	Arg	Gly	Ala	Val
				215					220					225
Val	Pro	Asp	Ser	Ala	Leu	Pro	Phe	Asn	Phe	Gln	Ala	Ala	Tyr	Gly
				230					235					240
Leu	Ser	Asp	Gln	Leu	Ala	Gln	Ala	Ile	Ser	Asp	His	Tyr	Pro	Val
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Glu	Val	Met	Leu	Lys										
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				20					25					30
Arg	Tyr	Asp	Ile	Ala	Leu	Val	Gln	Glu	Val	Arg	Asp	Ser	His	Leu
				35					40					45
Thr	Ala	Val	Gly	Lys	Leu	Leu	Asp	Asn	Leu	Asn	Gln	Asp	Ala	Pro
				50					55					60
Asp	Thr	Tyr	His	Tyr	Val	Val	Ser	Glu	Pro	Leu	Gly	Arg	Arg	Ser
				65					70					75
Tyr	Lys	Glu	Arg	Tyr	Leu	Phe	Val	Tyr	Arg	Pro	Asp	Gln	Val	Ser
				80					85					90
Ala	Val	Asp	Ser	Tyr	Tyr	Tyr	Asp	Asp	Gly	Cys	Glu	Pro	Cys	Gly
				95					100					105
Asn	Asp	Thr	Phe	Asn	Arg	Glu	Pro	Ala	Ile	Val	Arg	Phe	Phe	Ser
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Arg	Phe	Thr	Glu	Val	Arg	Glu	Phe	Ala	Ile	Val	Pro	Leu	His	Ala
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Ala	Pro	Gly	Asp	Ala	Val	Ala	Glu	Ile	Asp	Ala	Leu	Tyr	Asp	Val
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Tyr	Leu	Asp	Val	Gln	Glu	Lys	Trp	Gly	Leu	Glu	Asp	Val	Met	Leu
				155					160					165
Met	Gly	Asp	Phe	Asn	Ala	Gly	Cys	Ser	Tyr	Val	Arg	Pro	Ser	Gln
				170					175					180
Trp	Ser	Ser	Ile	Arg	Leu	Trp	Thr	Ser	Pro	Thr	Phe	Gln	Trp	Leu
				185					190					195
Ile	Pro	Asp	Ser	Ala	Asp	Thr	Thr	Ala	Thr	Pro	Thr	His	Cys	Ala
				200					205					210
Tyr	Asp	Arg	Ile	Val	Val	Ala	Gly	Met	Leu	Leu	Arg	Gly	Ala	Val
				215					220					225
Val	Pro	Asp	Ser	Ala	Leu	Pro	Phe	Asn	Phe	Gln	Ala	Ala	Tyr	Gly
				230					235					240
Leu	Ser	Asp	Gln	Leu	Ala	Gln	Ala	Ile	Ser	Asp	His	Tyr	Pro	Val
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Glu	Val	Met	Leu	Lys										
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				20					25					30
Arg	Tyr	Asp	Ile	Ala	Leu	Val	Gln	Glu	Val	Arg	Asp	Ser	His	Leu
				35					40					45
Thr	Ala	Val	Gly	Lys	Leu	Leu	Asp	Asn	Leu	Asn	Gln	Asp	Ala	Pro
				50					55					60
Asp	Thr	Tyr	His	Tyr	Val	Val	Ser	Glu	Pro	Leu	Gly	Arg	Asn	Lys
				65					70					75
Tyr	Lys	Glu	Arg	Tyr	Leu	Phe	Val	Tyr	Arg	Pro	Asp	Gln	Val	Ser
				80					85					90
Ala	Val	Asp	Ser	Tyr	Tyr	Tyr	Asp	Asp	Gly	Cys	Glu	Pro	Cys	Gly
				95					100					105
Asn	Asp	Thr	Phe	Asn	Arg	Glu	Pro	Ala	Ile	Val	Arg	Phe	Phe	Ser
				110					115					120

Arg	Phe	Thr	Glu	Val	Arg	Glu	Phe	Ala	Ile	Val	Pro	Leu	His	Ala
				125					130					135
Ala	Pro	Gly	Asp	Ala	Val	Ala	Glu	Ile	Asp	Ala	Leu	Tyr	Asp	Val
				140					145					150
Tyr	Leu	Asp	Val	Gln	Glu	Lys	Trp	Gly	Leu	Glu	Asp	Val	Met	Leu
				155					160					165
Met	Gly	Asp	Phe	Asn	Ala	Gly	Cys	Ser	Tyr	Val	Arg	Pro	Ser	Gln
				170					175					180
Trp	Ser	Ser	Ile	Arg	Leu	Trp	Thr	Ser	Pro	Thr	Phe	Gln	Trp	Leu
				185					190					195
Ile	Pro	Asp	Ser	Ala	Asp	Thr	Thr	Ala	Thr	Pro	Thr	His	Cys	Ala
				200					205					210
Tyr	Asp	Arg	Ile	Val	Val	Ala	Gly	Met	Leu	Leu	Arg	Gly	Ala	Val
				215					220					225
Val	Pro	Asp	Ser	Ala	Leu	Pro	Phe	Asn	Phe	Gln	Ala	Ala	Tyr	Gly
				230					235					240
Leu	Ser	Asp	Gln	Leu	Ala	Gln	Ala	Ile	Ser	Asp	His	Tyr	Pro	Val
				245					250					255
Glu	Val	Met	Leu	Lys										
				260										

<210> 12  
 <211> 260  
 <212> PRT  
 <213> Homo sapiens

<400> 12

Leu	Lys	Ile	Ala	Ala	Phe	Asn	Ile	Gln	Thr	Phe	Gly	Glu	Thr	Lys
1				5					10					15
Met	Ser	Asn	Ala	Thr	Leu	Val	Ser	Tyr	Ile	Val	Gln	Ile	Leu	Ser
				20					25					30
Arg	Tyr	Asp	Ile	Ala	Leu	Val	Gln	Glu	Val	Arg	Asp	Ser	His	Leu
				35					40					45
Thr	Ala	Val	Gly	Lys	Leu	Leu	Asp	Asn	Leu	Asn	Gln	Asp	Ala	Pro
				50					55					60
Asp	Thr	Tyr	His	Tyr	Val	Val	Ser	Glu	Pro	Leu	Gly	Arg	Asn	Ser
				65					70					75
Tyr	Lys	Glu	Arg	Tyr	Leu	Phe	Val	Tyr	Arg	Pro	Asp	Gln	Val	Ser
				80					85					90

Ala	Val	Asp	Ser	Tyr	Tyr	Tyr	Asp	Asp	Gly	Cys	Glu	Pro	Cys	Gly
				95					100					105
Asn	Asp	Thr	Phe	Asn	Arg	Glu	Pro	Ala	Ile	Val	Arg	Phe	Phe	Ser
				110					115					120
Arg	Phe	Thr	Glu	Val	Arg	Glu	Phe	Ala	Ile	Val	Pro	Leu	His	Ala
				125					130					135
Ala	Pro	Gly	Asp	Ala	Val	Ala	Glu	Ile	Asp	Ala	Leu	Tyr	Asp	Val
				140					145					150
Tyr	Leu	Asp	Val	Gln	Glu	Lys	Trp	Gly	Leu	Glu	Asp	Val	Met	Leu
				155					160					165
Met	Gly	Asp	Phe	Asn	Ala	Gly	Cys	Ser	Tyr	Val	Arg	Pro	Ser	Gln
				170					175					180
Trp	Ser	Ser	Ile	Arg	Leu	Trp	Thr	Ser	Pro	Thr	Phe	Gln	Trp	Leu
				185					190					195
Ile	Pro	Asp	Ser	Ala	Asp	Thr	Thr	Ala	Lys	Pro	Thr	His	Cys	Ala
				200					205					210
Tyr	Asp	Arg	Ile	Val	Val	Ala	Gly	Met	Leu	Leu	Arg	Gly	Ala	Val
				215					220					225
Val	Pro	Asp	Ser	Ala	Leu	Pro	Phe	Asn	Phe	Gln	Ala	Ala	Tyr	Gly
				230					235					240
Leu	Ser	Asp	Gln	Leu	Ala	Gln	Ala	Ile	Ser	Asp	His	Tyr	Pro	Val
				245					250					255
Glu	Val	Met	Leu	Lys										
				260										

<210> 13  
 <211> 260  
 <212> PRT  
 <213> Homo sapiens

<400> 13

Leu	Lys	Ile	Ala	Ala	Phe	Asn	Ile	Gln	Thr	Phe	Gly	Glu	Thr	Lys
1				5					10					15
Met	Ser	Asn	Ala	Thr	Leu	Val	Ser	Tyr	Ile	Val	Gln	Ile	Leu	Ser
				20					25					30
Arg	Tyr	Asp	Ile	Ala	Leu	Val	Gln	Glu	Val	Arg	Asp	Ser	His	Leu
				35					40					45
Thr	Ala	Val	Gly	Lys	Leu	Leu	Asp	Asn	Leu	Asn	Gln	Asp	Ala	Pro
				50					55					60

Asp	Thr	Tyr	His	Tyr	Val	Val	Ser	Glu	Pro	Leu	Gly	Arg	Asn	Ser	
				65					70					75	
Tyr	Lys	Glu	Arg	Tyr	Leu	Phe	Val	Tyr	Arg	Pro	Asp	Gln	Val	Ser	
				80					85					90	
Ala	Val	Asp	Ser	Tyr	Tyr	Tyr	Asp	Asp	Gly	Cys	Glu	Pro	Cys	Gly	
				95					100					105	
Asn	Asp	Thr	Phe	Asn	Arg	Glu	Pro	Ala	Ile	Val	Arg	Phe	Phe	Ser	
				110					115					120	
Arg	Phe	Thr	Glu	Val	Arg	Glu	Phe	Ala	Ile	Val	Pro	Leu	His	Ala	
				125					130					135	
Ala	Pro	Gly	Asp	Ala	Val	Ala	Glu	Ile	Asp	Ala	Leu	Tyr	Asp	Val	
				140					145					150	
Tyr	Leu	Asp	Val	Gln	Glu	Lys	Trp	Gly	Leu	Glu	Asp	Val	Met	Leu	
				155					160					165	
Met	Gly	Asp	Phe	Asn	Ala	Gly	Cys	Ser	Tyr	Val	Arg	Pro	Ser	Gln	
				170					175					180	
Trp	Ser	Ser	Ile	Arg	Leu	Trp	Thr	Ser	Pro	Thr	Phe	Gln	Trp	Leu	
				185					190					195	
Ile	Pro	Asp	Ser	Ala	Asp	Thr	Thr	Ala	Arg	Pro	Thr	His	Cys	Ala	
				200					205					210	
Tyr	Asp	Arg	Ile	Val	Val	Ala	Gly	Met	Leu	Leu	Arg	Gly	Ala	Val	
				215					220					225	
Val	Pro	Asp	Ser	Ala	Leu	Pro	Phe	Asn	Phe	Gln	Ala	Ala	Tyr	Gly	
				230					235					240	
Leu	Ser	Asp	Gln	Leu	Ala	Gln	Ala	Ile	Ser	Asp	His	Tyr	Pro	Val	
				245					250					255	
Glu	Val	Met	Leu	Lys											
				260											

<210> 14  
 <211> 260  
 <212> PRT  
 <213> Homo sapiens

<400> 14  
 Leu Lys Ile Ala Ala Phe Asn Ile Gln Thr Phe Gly Arg Thr Lys  
 1 5 10 15  
 Met Ser Asn Ala Thr Leu Val Ser Tyr Ile Val Gln Ile Leu Ser  
 20 25 30



Arg	Tyr	Asp	Ile	Ala	Leu	Val	Gln	Glu	Val	Arg	Asp	Ser	His	Leu	35	40	45
Thr	Ala	Val	Gly	Lys	Leu	Leu	Asp	Asn	Leu	Asn	Gln	Asp	Ala	Pro	50	55	60
Asp	Thr	Tyr	His	Tyr	Val	Val	Ser	Glu	Pro	Leu	Gly	Arg	Lys	Ser	65	70	75
Tyr	Lys	Glu	Arg	Tyr	Leu	Phe	Val	Tyr	Arg	Pro	Asp	Gln	Val	Ser	80	85	90
Ala	Val	Asp	Ser	Tyr	Tyr	Tyr	Asp	Asp	Gly	Cys	Glu	Pro	Cys	Gly	95	100	105
Asn	Asp	Thr	Phe	Asn	Arg	Glu	Pro	Ala	Ile	Val	Arg	Phe	Phe	Ser	110	115	120
Arg	Phe	Thr	Glu	Val	Arg	Glu	Phe	Ala	Ile	Val	Pro	Leu	His	Ala	125	130	135
Ala	Pro	Gly	Asp	Ala	Val	Ala	Glu	Ile	Asp	Ala	Leu	Tyr	Asp	Val	140	145	150
Tyr	Leu	Asp	Val	Gln	Glu	Lys	Trp	Gly	Leu	Glu	Asp	Val	Met	Leu	155	160	165
Met	Gly	Asp	Phe	Asn	Ala	Gly	Cys	Ser	Tyr	Val	Arg	Pro	Ser	Gln	170	175	180
Trp	Ser	Ser	Ile	Arg	Leu	Trp	Thr	Ser	Pro	Thr	Phe	Gln	Trp	Leu	185	190	195
Ile	Pro	Asp	Ser	Ala	Asp	Thr	Thr	Ala	Thr	Pro	Thr	His	Cys	Ala	200	205	210
Tyr	Asp	Arg	Ile	Val	Val	Ala	Gly	Met	Leu	Leu	Arg	Gly	Ala	Val	215	220	225
Val	Pro	Asp	Ser	Ala	Leu	Pro	Phe	Asn	Phe	Gln	Ala	Ala	Tyr	Gly	230	235	240
Leu	Ser	Asp	Gln	Leu	Ala	Gln	Ala	Ile	Ser	Asp	His	Tyr	Pro	Val	245	250	255
Glu	Val	Met	Leu	Lys											260		

<210> 15  
 <211> 260  
 <212> PRT  
 <213> Homo sapiens  
 <400> 15

Leu	Lys	Ile	Ala	Ala	Phe	Asn	Ile	Arg	Thr	Phe	Gly	Arg	Thr	Lys	1	5	10	15
Met	Ser	Asn	Ala	Thr	Leu	Val	Ser	Tyr	Ile	Val	Gln	Ile	Leu	Ser	20	25	30	
Arg	Tyr	Asp	Ile	Ala	Leu	Val	Gln	Glu	Val	Arg	Asp	Ser	His	Leu	35	40	45	
Thr	Ala	Val	Gly	Lys	Leu	Leu	Asp	Asn	Leu	Asn	Gln	Asp	Ala	Pro	50	55	60	
Asp	Thr	Tyr	His	Tyr	Val	Val	Ser	Glu	Pro	Leu	Gly	Arg	Lys	Ser	65	70	75	
Tyr	Lys	Glu	Arg	Tyr	Leu	Phe	Val	Tyr	Arg	Pro	Asp	Gln	Val	Ser	80	85	90	
Ala	Val	Asp	Ser	Tyr	Tyr	Tyr	Asp	Asp	Gly	Cys	Glu	Pro	Cys	Gly	95	100	105	
Asn	Asp	Thr	Phe	Asn	Arg	Glu	Pro	Ala	Ile	Val	Arg	Phe	Phe	Ser	110	115	120	
Arg	Phe	Thr	Glu	Val	Arg	Glu	Phe	Ala	Ile	Val	Pro	Leu	His	Ala	125	130	135	
Ala	Pro	Gly	Asp	Ala	Val	Ala	Glu	Ile	Asp	Ala	Leu	Tyr	Asp	Val	140	145	150	
Tyr	Leu	Asp	Val	Gln	Glu	Lys	Trp	Gly	Leu	Glu	Asp	Val	Met	Leu	155	160	165	
Met	Gly	Asp	Phe	Asn	Ala	Gly	Cys	Ser	Tyr	Val	Arg	Pro	Ser	Gln	170	175	180	
Trp	Ser	Ser	Ile	Arg	Leu	Trp	Thr	Ser	Pro	Thr	Phe	Gln	Trp	Leu	185	190	195	
Ile	Pro	Asp	Ser	Ala	Asp	Thr	Thr	Ala	Thr	Pro	Thr	His	Cys	Ala	200	205	210	
Tyr	Asp	Arg	Ile	Val	Val	Ala	Gly	Met	Leu	Leu	Arg	Gly	Ala	Val	215	220	225	
Val	Pro	Asp	Ser	Ala	Leu	Pro	Phe	Asn	Phe	Gln	Ala	Ala	Tyr	Gly	230	235	240	
Leu	Ser	Asp	Gln	Leu	Ala	Gln	Ala	Ile	Ser	Asp	His	Tyr	Pro	Val	245	250	255	
Glu	Val	Met	Leu	Lys	260													

<210> 16  
 <211> 260  
 <212> PRT  
 <213> Homo sapiens

<400> 16  
 Leu Lys Ile Ala Ala Phe Asn Ile Gln Thr Phe Gly Arg Thr Lys  
     1                    5                    10                    15  
 Met Ser Asn Ala Thr Leu Val Ser Tyr Ile Val Gln Ile Leu Ser  
                     20                    25                    30  
 Arg Tyr Asp Ile Ala Leu Val Gln Glu Val Arg Asp Ser His Leu  
                     35                    40                    45  
 Thr Ala Val Gly Lys Leu Leu Asp Asn Leu Asn Gln Asp Ala Pro  
                     50                    55                    60  
 Asp Thr Tyr His Tyr Val Val Ser Glu Pro Leu Gly Arg Lys Ser  
                     65                    70                    75  
 Tyr Lys Glu Arg Tyr Leu Phe Val Tyr Arg Pro Asp Gln Val Ser  
                     80                    85                    90  
 Ala Val Asp Ser Tyr Tyr Tyr Asp Asp Gly Cys Glu Pro Cys Gly  
                     95                    100                    105  
 Asn Asp Thr Phe Asn Arg Glu Pro Ala Ile Val Arg Phe Phe Ser  
                     110                    115                    120  
 Arg Phe Thr Glu Val Arg Glu Phe Ala Ile Val Pro Leu His Ala  
                     125                    130                    135  
 Ala Pro Gly Asp Ala Val Ala Glu Ile Asp Ala Leu Tyr Asp Val  
                     140                    145                    150  
 Tyr Leu Asp Val Gln Glu Lys Trp Gly Leu Glu Asp Val Met Leu  
                     155                    160                    165  
 Met Gly Asp Phe Asn Ala Gly Cys Ser Tyr Val Arg Pro Ser Gln  
                     170                    175                    180  
 Trp Ser Ser Ile Arg Leu Trp Thr Ser Pro Thr Phe Gln Trp Leu  
                     185                    190                    195  
 Ile Pro Asp Ser Ala Asp Thr Thr Ala Lys Pro Thr His Cys Ala  
                     200                    205                    210  
 Tyr Asp Arg Ile Val Val Ala Gly Met Leu Leu Arg Gly Ala Val  
                     215                    220                    225  
 Val Pro Asp Ser Ala Leu Pro Phe Asn Phe Gln Ala Ala Tyr Gly  
                     230                    235                    240

Leu Ser Asp Gln Leu Ala Gln Ala Ile Ser Asp His Tyr Pro Val  
245 250 255

Glu Val Met Leu Lys  
260

<210> 17

<211> 260

<212> PRT

<213> Homo sapiens

<400> 17

Leu Lys Ile Ala Ala Phe Asn Ile Arg Thr Phe Gly Arg Thr Lys  
1 5 10 15

Met Ser Asn Ala Thr Leu Val Ser Tyr Ile Val Gln Ile Leu Ser  
20 25 30

Arg Tyr Asp Ile Ala Leu Val Gln Glu Val Arg Asp Ser His Leu  
35 40 45

Thr Ala Val Gly Lys Leu Leu Asp Asn Leu Asn Gln Asp Ala Pro  
50 55 60

Asp Thr Tyr His Tyr Val Val Ser Glu Pro Leu Gly Arg Lys Ser  
65 70 75

Tyr Lys Glu Arg Tyr Leu Phe Val Tyr Arg Pro Asp Gln Val Ser  
80 85 90

Ala Val Asp Ser Tyr Tyr Tyr Asp Asp Gly Cys Glu Pro Cys Gly  
95 100 105

Asn Asp Thr Phe Asn Arg Glu Pro Ala Ile Val Arg Phe Phe Ser  
110 115 120

Arg Phe Thr Glu Val Arg Glu Phe Ala Ile Val Pro Leu His Ala  
125 130 135

Ala Pro Gly Asp Ala Val Ala Glu Ile Asp Ala Leu Tyr Asp Val  
140 145 150

Tyr Leu Asp Val Gln Glu Lys Trp Gly Leu Glu Asp Val Met Leu  
155 160 165

Met Gly Asp Phe Asn Ala Gly Cys Ser Tyr Val Arg Pro Ser Gln  
170 175 180

Trp Ser Ser Ile Arg Leu Trp Thr Ser Pro Thr Phe Gln Trp Leu  
185 190 195

Ile Pro Asp Ser Ala Asp Thr Thr Ala Lys Pro Thr His Cys Ala  
200 205 210

Tyr	Asp	Arg	Ile	Val	Val	Ala	Gly	Met	Leu	Leu	Arg	Gly	Ala	Val
				215					220					225
Val	Pro	Asp	Ser	Ala	Leu	Pro	Phe	Asn	Phe	Gln	Ala	Ala	Tyr	Gly
				230					235					240
Leu	Ser	Asp	Gln	Leu	Ala	Gln	Ala	Ile	Ser	Asp	His	Tyr	Pro	Val
				245					250					255
Glu	Val	Met	Leu	Lys										
				260										